

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A method for placing spacer uniformly and securely onto ~~[[the]]~~ a substrate of a liquid crystal display element, comprising the steps of:

~~[[(a) P]] preparing an UV [or thermal] a spacer-resin mixture of thermal curable resin containing spacer particles[[.]];~~

~~[[(b) D]] dispersing certain amount of above the spacer-resin mixture on a gravure cylinder with well finished designed cells to be used as the spacer-resin carrier. a predetermined pattern of holes;~~

~~[[(c) R]] removing excess spacer-resin mixture and [[forced]] forcing only single spacer particle with the thermal curable resin into each hole to form a spacer-resin pattern; and by means of doctor knife.~~

~~(d) T transferring individual spacer-resin onto a second smooth surfaced roller according to the designed pattern by means of contact.~~

~~[[(e) T]] transferring individual patterned the spacer-resin pattern onto the surface of substrate of a liquid crystal display element from the second roller with any conventional coating methods.~~

2. (Currently amended) The method according to claim 1, wherein the
[[A]] spacer-resin composition in part (a) of claim 1 is comprising mixture includes:

~~(a). An uniform size of plastic or glass spacer particles, either made of plastic or glass. The shape of spacer particles can be in spherical or rod-like shape. [[.]]~~

~~(b). UV or thermal curable (meth)acrylated ultraviolet acrylate and/or ultraviolet methacrylate oligomers[[.]];~~

~~(c). [[V]] vinyl monomers or (meth)acrylate monomers. acrylate monomers and/or methacrylate monomers; and~~

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(d). ~~[[P]]~~photo-initiators or thermal-initiators.

(e). ~~Additive:~~

3. (Currently amended) The ~~method according to claim 2, wherein the spacer-resin mixture further includes additives of~~ additives in part (e) of claim 2 can be dispersants, surfactants, antioxidants, light -stabilizers and coating aids ~~which aiding to increase a dispersing ability of the spacer particle[[s]] during mixing with the thermal curable resin or impart other desirable properties to the spacer-resin mixture.~~

4. (Currently amended) The ~~method according to claim 1, wherein the gravure roller used in part (b) of claim 1 should made of~~ includes a hydrophobic, non-adhesive layer with a thickness greater than twice of ~~[[the]]~~a diameter of the spacer particle[[s]].

Claim 5 (Cancelled).

6. (Currently amended) The ~~method according to claim 4, wherein the~~ hydrophobic, non-adhesive layer in claim 4 is a low surface energy fluorinated polymer.

7. (Currently amended) The ~~method according to claim 1, wherein size of the hole in part (b) of claim 1 has an opening diameter and [[the]]~~a depth both at 105-195% of ~~[[the]]~~a diameter of the spacer particle.

8. (Currently amended) The ~~method according to claim 1, wherein the gravure roller used in part (b) of claim 1 can be~~ includes an engraved ~~[[the]]~~ metal cylinder first, then coated with a ~~[[thin]]~~ layer of hydrophobic, non-adhesive coating ~~formed thereon.~~

Claim 9 (Cancelled).

10. (Currently amended) The ~~method according to claim 8, wherein the~~ hydrophobic, non-adhesive ~~thin layer in claim 8 coating~~ is a low surface energy fluorinated polymer.

11. (Currently amended) A method for placing sealant uniformly and securely onto ~~[[the]]~~a substrate of a liquid crystal display element, comprising the steps of:

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~~[[(a). P]]preparing an UV (or thermal) a spacer-sealant mixture of thermal curable sealant containing spacer particles[[.]];~~

~~[[(b). D]]dispersing certain amount of above the spacer-sealant mixture on a gravure cylinder with channel-like design pattern to be used as the spacer-sealant carrier. a predetermined pattern of at least one channel;~~

~~[[(c). R]]removing excess spacer-sealant mixture and forced correct amount of spacer-sealant mixture into the channel. forcing only single layer of spacer particles with the thermal curable sealant into each channel to form a spacer-sealant pattern; and~~

~~(d). Transferring a strip of spacer-sealant mixture onto a second smooth surfaced roller according to the designed pattern by means of contact.~~

~~[[(e) T]]transferring the patterned spacer-sealant pattern onto the surface of substrate of a liquid crystal display element from the second roller with any conventional coating methods.~~

12. (Currently amended) ~~The method according to claim 11, wherein the An adhesive spacer-sealant composition in part (a) of claim 11 is comprising mixture includes:~~

~~(a). An uniform size of plastic or glass spacer particles, either made of plastic or glass. The shape of spacer particles can be in spherical or rod-like shape;[[.]]~~

~~(b). UV or thermal curable (meth)acrylated ultraviolet acrylate and/or ultraviolet methacrylate oligomers[[.]];~~

~~(c). [[V]]vinyl monomers or (meth)acrylate monomers, acrylate monomers and/or methacrylate monomers;~~

~~(d). An epoxy (meth)acrylates: epoxy acrylates and/or methacrylates;~~

~~(e). [[P]]photo-initiators or thermal-initiators.~~

~~(f). Additive.~~

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13. (Currently amended) ~~The method according to claim 12, wherein the spacer-resin mixture further includes additives of~~ additives in part (f) of claim 12 can be dispersants, surfactants, antioxidants, light -stabilizers and coating aids ~~which aiding to increase a~~ dispersing ability of the spacer particle[[s]] during mixing ~~with the thermal curable sealant or impart other desirable properties to the spacer-resin mixture.~~

14. (Currently amended) ~~The method according to claim 11, wherein the gravure roller used in part (b) of claim 11 should made of~~ includes a hydrophobic, non-adhesive layer with a thickness greater than twice of [[the]] a diameter of the spacer particle[[s]].

Claim 15 (Cancelled).

16. (Currently amended) ~~The method according to claim 4, wherein the~~ hydrophobic, non-adhesive layer in claim 14 is a low surface energy fluorinated polymer.

17. (Currently amended) ~~The method according to claim 1, wherein a~~ depth of the channel in part (b) of claim 14 is about 105-195% of [[the]] a diameter of the spacer particle.

18. (Currently amended) ~~The method according to claim 1, wherein the gravure roller used in part (b) of claim 11 can be~~ includes an engraved [[the]] metal cylinder first, then coated with a [[thin]] layer of hydrophobic, non-adhesive coating ~~formed thereon.~~

Claim 19 (Cancelled).

20. (Currently amended) ~~The method according to claim 8, wherein the~~ hydrophobic, non-adhesive thin layer in claim 18 ~~coating~~ is a low surface energy fluorinated polymer.

Claims 21~23 (Withdrawn).

Claims 24~25 (Cancelled).

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